ATTACHMENT A
Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

1.- 46. (Cancelled)

47. (New) A method for measuring glucose in a body fluid of a subject, the method comprising:

measuring impedance of a first body tissue with at least one pair of an injection electrode for injection of electrical current into said first body tissue and a sensing electrode for detecting the ensuing voltage of said first body tissue;

wherein said injection electrode is in contact with said first body tissue or a second body tissue;

wherein said sensing electrode is in contact with said first or said second body tissue;

and determining the amount of glucose in the body fluid based upon the measured impedance.

48. (New) The method of claim 47 wherein impedance of the first body tissue is measured with one pair of electrodes.

49. (New) The method of claim 47 wherein impedance of the first body tissue is measured with two pairs of electrodes, each pair being an injection electrode and a sensing electrode.

50. (New) The method of claim 47 wherein the injection electrode and the sensing electrode are in electrically conductive contact with the first body tissue.

51. (New) The method of claim 47 wherein the injection electrode and the sensing electrode are in electrically conductive contact with the second body tissue.

52. (New) The method of claim 47 wherein the first body tissue is a sub-dermal body tissue and the second body tissue is skin.

53. (New) The method of claim 47 wherein the first body tissue is a first sub-dermal body tissue and the second body tissue is a second sub-dermal body tissue, wherein said first and second sub-dermal body tissues are the same or different.

54. (New) The method of claim 47 wherein the impedance is measured at a plurality of frequencies in a range of 1 Hz to 10 MHz.

55. (New) The method of claim 47 wherein the body fluid is blood.

56. (New) The method of claim 47 wherein determining the amount of glucose includes comparing the measured impedance with a predetermined relationship between impedance of the sub-dermal body tissue and blood glucose level.

57. (New) The method of claim 47 wherein the injecting electrodes and the sensing electrodes are in operative connection with a microprocessor programmed to determine the amount of glucose level based upon the measured impedance.

58. (New) The method of claim 57 wherein the microprocessor is programmed to determine the glucose level of a subject based on a principal component analysis and a partial least squares regression analysis of the measured impedance.

59. (New) The method of claim 57 wherein an indicator is operatively connected to the microprocessor for indication of the determined glucose level.

60. (New) The method of claim 59 wherein the indicator comprises a visual display to the subject.

61. (New) A method for measuring glucose in a body fluid of a subject, the method comprising:

measuring impedance of a first body tissue with two pairs of electrodes, each pair being an injection electrode for injecting electrical current into said first body tissue and a sensing electrodes for detecting the ensuing voltage of said first body tissue, wherein said injection electrodes and said sensing electrodes are in electrically conductive contact with said first body tissue or a second body tissue;

and determining the amount of glucose in the body fluid based upon the measured impedance.

62. (New) The method according to claim 61 wherein one pair of electrodes is in electrically conductive contact at a first position on the subject and the second pair of electrodes is placed at a second position on the subject, and wherein impedance of a sub-dermal body tissue is measured between the first and second positions.

63. (New) The method of claim 61 wherein the injection and the sensing electrodes are in electrically conductive contact with the first body tissue.

64. (New) The method of claim 61 wherein the injection electrodes and the sensing electrodes are in electrically conductive contact with the second body tissue.

65. (New) The method of claim 61 wherein the first body tissue is a subdermal body tissue and the second body tissue is skin tissue.

66. (New) The method of claim 61 wherein the first body tissue is a first sub-dermal body tissue and the second body tissue is a second sub-dermal body tissue, wherein said first and second sub-dermal body tissues are the same or different.

67. (New) The method of claim 65 wherein the skin is treated with saline solution prior to measuring impedance.

68. (New) The method according to claim 65, wherein an electrically conductive gel is applied to the skin to enhance the conductive contact of the electrodes with the skin prior to measuring impedance.

69. (New) The method of claim 65 wherein the sub-dermal body tissue is muscle.

70. (New) The method of claim 65 wherein the sub-dermal body tissue is fat.

71. (New) The method of claim 65 wherein the sub-dermal body tissue is blood vessels.

72. (New) The method of claim 66 wherein the first sub-dermal body tissue and the second sub-dermal body tissue are each selected from the group consisting of muscle, fat, and blood vessels.

73. (New) The method according to claim 61 wherein the body fluid is blood.

74. (New) The method of claim 65 wherein determining the amount of glucose includes comparing the measured impedance with a predetermined relationship between impedance of the sub-dermal body tissue and blood glucose level.

75. (New) The method of claim 61 wherein the injecting electrodes and the sensing electrodes are in operative connection with a microprocessor programmed to determine the amount of glucose level based upon the measured impedance.

76. (New) The method of claim 75 wherein the microprocessor is programmed to determine the glucose level of a subject based on a principal component analysis and a partial least squares regression analysis of the measured impedance.

77. (New) The method of claim 75 wherein an indicator is operatively connected to the microprocessor for indication of the determined glucose level.

78. (New) The method of claim 77 wherein the indicator comprises a visual display to the subject.

79. (New) An apparatus for monitoring glucose in a body fluid of a subject according to the method of claim 47, the apparatus comprising:

at least one pair of an injection electrode for injection of electrical current into the first body tissue and a sensing electrode for detecting the ensuing voltage of said first body tissue;

said electrodes are in electrically conductive contact with the first body tissue or the second body tissue;

a microprocessor operatively connected to the means for measuring impedance for determining the amount of glucose in the body fluid based upon the impedance measurement.

80. (New) The apparatus of claim 79 where there is one pair of electrodes.

81. (New) The apparatus of claim 79 where there are two pairs of electrodes, each pair being an injection electrode and a sensing electrode.

82. (New) The apparatus of claim 79 wherein the first body tissue is a sub-dermal body tissue.

83. (New) The apparatus of claim 82 wherein the sub-dermal body tissue is muscle.

84. (New) The apparatus of claim 82 wherein the sub-dermal body tissue is fat.

85. (New) The apparatus of claim 82 wherein the sub-dermal body tissue is blood vessels.

86. (New) The apparatus of claim 79 further comprising an amperometer, a voltmeter and source of electric current for measuring the impedance of the first body tissue between said injection electrodes and said sensing electrodes; wherein the amperometer and source of electric current are in operative connection with the

injection electrodes and the voltmeter is in operative connection with the sensing electrodes.

87. (New) The apparatus of claim 86 wherein said electrical current is provided at a plurality of frequencies in a range of 1 Hz to 10 MHz.

88. (New) The apparatus of claim 79 wherein the microprocessor is operatively connected to an insulin pump and includes means to adjust the amount of insulin flow via the pump to the subject based on the determined blood glucose level.

89. (New) The apparatus of claims 79 further comprising means for calibrating the apparatus against a directly measured glucose level of said subject.

90. (New) The apparatus of claim 79 wherein the microprocessor is programmed to determine the glucose level of a subject based on a principal component analysis and a partial least squares regression analysis.

91. (New) The apparatus of claim 79 further comprising an indicator operatively connected to the microprocessor for indication of the determined amount of glucose.

92. (New) The apparatus of claim 79 wherein the apparatus is implanted in the body tissue for which the impedance is to be measured.

93. (New) The apparatus of claim 91 wherein the indicator comprises a visual display.